

Topics in Primary Care Medicine

Clinical Breast Examination

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Clinical breast examination (CBE) continues to be important despite the widespread use of mammography. About half of breast cancers are still found by patients themselves, so clinicians must use CBE to understand what patients are finding on their bodies. In addition, CBE by health professionals is still the only way that more than 10% of breast cancers are detected.^{1,2}

Clinical breast examination is a rapid procedure. In two to three minutes,³ a clinician can decide whether a woman's breasts are as expected in the dual context of what is normal for all women and what would be usual changes given the patient's personal history.

Most written descriptions of CBE focus on the sequential steps of the examination—with occasionally a discussion of how to palpate—but omit the mental checklist a clinician should review to understand the examination. In this essay, I suggest points that physicians should consider during CBE. These are not all inclusive, but any CBE should, as a minimum, include the topics outlined here.

Role of Risk Factors in the Routine Clinical Breast Examination

Statistics cannot guide the conclusions drawn from any specific routine breast evaluation. Despite their use to shape our understanding of breast cancer and to guide future research, statistics have little practical value during an individual routine examination. There is not sufficient difference between the yield of CBE in a high-risk patient and that in a low-risk patient to use risk factors to decide whether a CBE is within normal limits. Most breast cancers occur in women who have no known risk factors, so that the absence of risk factors is not a reliable basis to decide not to proceed with the further evaluation of a possible area of concern. Likewise, although a woman may be at high risk for breast cancer, "high risk" is a relative term describing the likelihood of cancer over a lifetime.⁴ In this context, even for a high-risk patient, each clinical evaluation represents one chance out of a lifetime that a single event will be recognized. Thus, even for high-risk women, the chance of finding a breast cancer during any single breast examination is low.

Taking a history of personal risk factors acknowledges the concerns of the patient and prepares the physician to counsel her concerning future expectations. Taking a history is also the way to learn what a patient

may have felt during a self-examination. These aspects of caring for the patient should not, however, be confused with bases to decide whether a woman's examination is within normal limits. Every breast examination should be done in the same manner for all women with equal attention to detail and an equal level of suspicion.

Components of a Clinical Breast Examination

Observation of the breast, the palpation of local and regional lymph nodes, and palpation of the breast are the components of a CBE. During a complete breast examination, the examiner should consider the following: Is the breast being examined in a standardized way that is likely to detect possible abnormalities in any part of the breast? Are findings consistent with the known, normal structure of the breast? Are the breasts symmetric? Are findings on palpation consistent with a woman's life history?

Observation of the Breast

Breast examination begins with a static observation; the clinician observes the skin for rashes, discoloration, or ecchymosis as well as any visible lumps, swelling, or changes in the skin.

Next, the clinician observes the motion of the breast as the patient changes position. During changes from a supine to a sitting position, the gland moves, changes shape, shifts its position, and exerts tension on the suspensory ligaments that connect the breast to the overlying skin and the underlying chest wall muscles. Normally this tension is distributed evenly, and the skin of the breast pulls in a smooth contour. Irregularity of the tension on the skin of the breast causes dimpling and indicates that something abnormal has disturbed the normal shifting and flexibility of the breast.

Dimpling or a visible irregularity of tension on breast skin, if it exists, is accentuated by pulling on the mammary gland with traction from the underside. Such traction is created when the patient raises her arm over her head, thereby moving the insertion of the pectoral muscle upward or, alternatively, when she flexes her pectoral muscles, which will pull the muscle tighter and the deep surface of the breast upward. Relative, deep tension can also be created by having the patient lean forward. This method uses gravity to pull the breast and skin away from the pectoral muscle and is particularly useful in a woman who has large breasts.

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Palpation of Lymph Nodes

Lymph nodes should be sought above and below the clavicles and in the axillae. The palpation of lymph nodes is influenced by the position of the patient and the amount of body fat. Axillary lymph nodes, for example, are more easily felt when a woman sits erect and the weight of her breast pulls axillary tissue, particularly high nodes, down to an accessible position. Body fat can obscure small nodes, although small axillary nodes are sometimes encountered in persons who have frequent small cuts from pets or perform repeated wet or dirty tasks such as gardening.

Palpation of the Breast

Palpation of the breast is the most important and least discussed part of CBE—that is, the motions of breast examination are well described, but the interpretation of the findings is only vaguely discussed. For this reason, several key questions about palpation are posed and discussed.

How does the position help palpation of the breast?

In general, a clinician learns more by observing the breast and palpating nodes when a woman is sitting and palpating the breast when she is supine. Occasionally, however, a mass will best be felt during bimanual palpation when the patient is sitting—that is, one hand supports the breast while the other palpates.

Whether a woman is sitting or lying, the physician usually asks her to hold her hands behind her head during palpation of the breast. The result is that the breast is pulled flatter, which makes any specific part of the breast “thinner” and easier to palpate.

What pattern should be used for palpating the breast? The pattern of palpation determines whether a thorough examination is done. Accessory breast tissue can be encountered as far cephalad as the anterior shoulder or as far caudal as the groin, but in general, a complete CBE covers from the clavicle to the inframammary fold and from the midaxillary line to the middle of the sternum. Studies of breast self-examination have shown that radial or circular patterns tend to focus attention on the area immediately around the nipple and areola and to overlook peripheral areas.⁵ A more complete breast examination is done when the fingers cover the breast in sequential vertical strips from the clavicle to the inframammary fold starting at the midaxillary line and moving medially (Figure 1).⁵ Although these are studies of self-examination, there is no reason to think that clinicians will not make similar errors if there is not meticulous attention to palpating all areas of breast tissue.

How should fingers move during palpation?

Palpation can be done several ways: using two or three fingers in small circular motions with varying pressure to sense the consistency of breast tissue at different depths under the skin; rolling tissue between two fingers as though alternating between the “j” and the “k” on a keyboard or the “A” and “B” on a piano; and sliding the

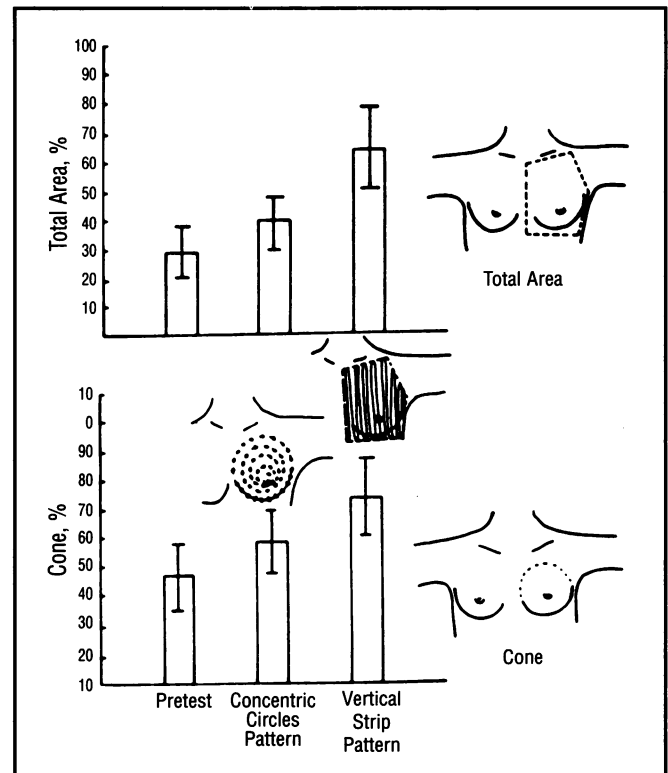


Figure 1.—The portion of the breast tissue evaluated during breast self-examination is influenced by the examination pattern. A vertical strip pattern results in a larger portion of the breast area being covered. It is probable that physicians also fail to examine substantial portions of the breast if they assume that the nipple is the center of the breast. The vertical bar represents the standard deviation. (Reprinted with permission from Saunders et al.⁵)

fingers over the surface of the breast with or without some form of skin lubrication with water, soap, alcohol, or sheets of silicone-coated rubber. Each of these techniques has its usefulness, and experienced clinicians tend to use them in combination. It is also sometimes useful to stabilize the breast with a hand on the nipple areolar complex, using the other hand to examine each quadrant of the breast in a smaller strip pattern.

How Density and Nodularity Affect a Clinical Breast Examination

When palpating the breasts, clinicians always feel a composite of tissue that includes skin, subcutaneous fat, gland, muscle, and bone (Figure 2).⁶ Two properties of this composite can be described: density or firmness that indicates the degree to which breast tissue can be compressed or deformed by the pressure of the examiner's hand; and nodularity or bumpiness that indicates the degree to which the surface of the breast varies between smooth and irregular. A less dense breast tends to be more nodular, and vice versa.⁷

Density can be defined by the degree to which the outline of ribs can be felt through the gland tissue of the breast. In most women, it is possible to feel ribs through the upper outer quadrant of the breast tissue (the area of

greatest density in most women); in some women, it is possible to feel only a suggestion of the shape of the ribs in this area; and in some women it is impossible to feel the ribs at all.⁷ Clinicians can confirm that a rib is being felt by following the edge of the rib from an easily accessible area such as beside the sternum or in the axilla. The use of the ribs as a reference point reduces the possibility of confusing ribs palpated through the breast tissue for “lumps,” and because ribs are always present, it gives an objective way to compare the density of one woman’s breasts with that of another’s.

Nodularity is more subjective, although the extremes are relatively obvious. A smooth breast that has literally no nodularity is extremely uncommon, but it does exist. The other extreme, equally uncommon, is a breast that has multiple hard lumps and therefore many areas of possible concern. The breasts of most women are between these extremes, with some diffuse nodularity over the entire breast. With sufficient compression, breast tissue, and particularly subcutaneous fat, can be felt in smaller segments or sections and interpreted as lumpy. By focusing on density and nodularity as distinct characteristics of breast tissue, a clinician will be aware of the amount of pressure exerted during the examination and therefore avoid interpreting normal findings as abnormal.

The presence of nodularity and density does not indicate disease. There is no correlation between either nodularity or density and the presence of underlying disease that might indicate an increased risk of cancer.⁷ These descriptors help physicians avoid broad or inclusive terms such as “fibrocystic” that, though commonly used, are confusing because they have no precise meaning other than as a general impression.⁸

How the Quadrants Differ

Palpation of the breast differs according to the area of the breast being examined. Typically the upper outer quadrant is denser than the upper inner or the lower outer quadrants and much denser than the lower inner quadrant. In addition, the lower and medial parts of the pectoralis major muscle tend to have less bulk, and, therefore, ribs may be more sharply defined during the palpation of breast tissue over these areas. If the breast is large or there is pendulous tissue, the lower edge of the breast where the tissue is folded on itself for prolonged periods of time may thicken into what has been called the inframammary fold.

The central part of the breast, beneath the areola and nipple, reflects the nurturing function of the breast. This is the reservoir from which nursing infants suck milk; it must be distensible and flexible for nursing. For this reason, retroareolar tissue is usually softer than the surrounding breast gland, even the tissue in the lower inner quadrant. Often the gland tissue that borders the areola has a distinctly scalloped or nodular feel.

The Usefulness of Symmetry

Understanding the normal distribution and architecture of the breast helps clinicians anticipate findings on

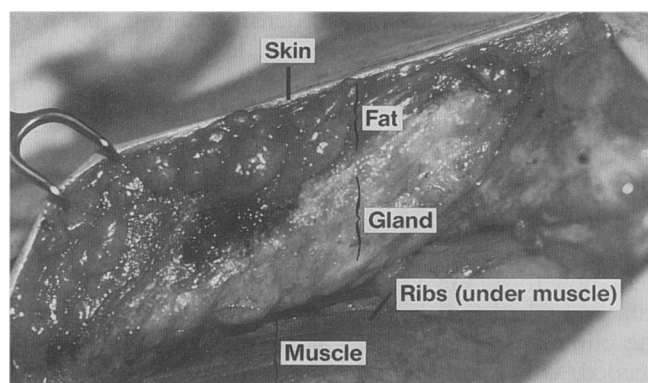


Figure 2.—During palpation, a composite of skin, subcutaneous fat, the breast gland tissue, muscle, and underlying bone of the chest wall is felt. Palpation of the ribs through the breast is a useful way to determine the breast density and avoid mistaking ribs for lumps. (Reprinted with permission from Goodson.⁶)

an individual patient. For example, it is not rare for a woman to have some increased density in the upper mid-portion of her breast, at what is often described as the 12 o’clock position. Fortunately, such less typical distribution of gland tissue tends to be symmetric. If it is not symmetric, the clinician must ask, “Why?”

The assessment of symmetry helps determine whether a specific area of a woman’s breast is abnormal or is simply “normal” for her. Symmetry is best evaluated when the clinician examines each breast symmetrically from the same relative position—that is, the clinician walks to both sides of the table to complete the examination from a symmetric perspective (this “walk” is included in the 3-minute screening examination). Results are enhanced when a woman’s breasts are dependent toward her side while she is supine.

Obvious exceptions to symmetry are areas of previous surgical therapy. The breast gland tissue under a skin scar can be focally scarred or thickened. Alternatively, if the gland tissue has not been successfully approximated after a previous operation, the area under a scar will be softer, and adjacent areas where tissue of normal consistency resumes can actually feel denser and raise concern that there may be an adjacent “lump.”

How Life History Influences Density and Nodularity

Nodularity and looseness of the skin both increase greatly if there have been events when a woman’s breasts were larger and then became smaller, such as after pregnancy and lactation when breast engorgement subsides, and the breast feels more nodular. This is not “fibrocystic,” and these normal, anticipated changes should not be interpreted as a disease or a “condition.” Similar changes are seen after substantial weight loss and when hormonal stimulation of the breasts stops after menopause. Weight gain can obscure nodularity, and the clinician must ascertain that fatty lobules are of uniform density over wide areas of the breast. If a woman uses hormone replacement therapy after menopause, her breasts may increase in density. Premenopausal women

often have increased breast density during the premenstrual period when hormonal levels are high and decreased density when hormonal levels drop as menstruation begins. Such changes should be considered whenever a patient's breasts are being examined.

How to Decide if an Abnormality Exists

Having decided how to position the patient, what pattern of breast examination to use, how to use one's fingers, how to stabilize the breast, how to describe what is felt, and whether findings on palpation are as expected, the clinician must decide whether further evaluation is needed. Obvious lumps that are discrete and distinctly different from surrounding tissue are usually not difficult to identify. They can move within tissue or feel fixed, and like large visible lumps, they are easily perceived as different. Subtle findings are areas that do not move, shift, or compress as anticipated or that are asymmetric relative to the other breast in one of these characteristics or in density or nodularity in general. A common misconception is that clinicians seek lumps and then interpret what the lump or other area is. This assumes that some combination of experience and sensory acuity will lead to the right decision as to whether a specific "lump" might be cancer and therefore warrant a biopsy. It is more productive to consider the breast as an organ with a structure that should make sense in the context of normal breast structure and a woman's life history. Any deviation from expected findings requires further assessment.

What Does Breast Tenderness Signify?

Breast tenderness, which many women report during breast examination, correlates in a general way with breast density.⁹ Generalized tenderness is not usually an instructive finding, however, and pain itself is an unusual presentation of cancer.¹⁰ Tenderness during deep palpation is best considered like abdominal discomfort that can be elicited by deep palpation on most persons. Exceptions are sensitivity to light palpation or focal tenderness. With sensitivity to light palpation, possibilities of infection or generalized cancer must be considered. Skin changes are often present in such cases, although cancers that cause skin changes, such as inflammatory cancer, can also be painless. The evaluation of focal tenderness is complicated because the patient, who feels the pain, can repeatedly localize one area. For both sensitivity or focal tenderness, the clinician's task is the same as when these symptoms are not present. The physician examines for areas that have distinct or asymmetric characteristics.¹¹ In the absence of physical findings, biopsy can be guided only by mammography if an abnormality is detected or by doing a biopsy directed not by palpation or mammography but by the patient's descriptions. There is no best way to decide whether to do a biopsy in these situations, and consultation is often useful.

When the Clinician Cannot Feel What the Patient Feels

Many women are sensitive to minor changes and variations that occur in their own breasts and that are not

readily apparent to a clinician. If a woman reports an area of concern that the clinician cannot feel and cannot detect by mammography, it is important to resolve this difference in a way that respects the observation of the patient. Options include the following: repeating the CBE at a brief interval of two or three months and a longer interval of about six months, referring the patient to a surgeon and other physician for examination, and recognizing that the patient may be correct and acknowledging to the patient that she has the right to seek another opinion. Remember that more than half of breast cancers are found by patients themselves.¹²

Summary

An astute clinician has an appreciation of the wide variation possible in normal breasts, but anticipates that the palpation of the breasts of an individual woman will be determined by basic facts concerning typical relative distribution of gland tissue, breast symmetry, the influence of life history, and possibly previous surgery. If the findings of a CBE are not as anticipated, the clinician must find out why this is so. This is a different frame of reference from asking whether a given lump or area should be considered suspicious for cancer. The basic questions are whether the findings of a CBE are consistent with typical breast structure and anatomy and in the context of the woman's life history. If these questions can be answered in the affirmative, the examination is complete; if not, further evaluation is necessary.^{12,13}

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